

TWO NEWLY DESCRIBED CYCADS FROM AFRICA

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ABSTRACT

Recent intensive field study of *Encephalartos* in Uganda and South Africa reveal two overlooked species. The nature of these entities, their distribution, and conservation status is discussed.

KEY WORDS: *Encephalartos*, new species, Zamiaceae

Encephalartos nubimontanus P.J.H. Hurter, *spec. nov.* TYPE: SOUTH AFRICA. Northern Province: 1,000 m alt., (leaf and male cone). 27 March 1995, P.J.H. Hurter 95R/1. (HOLOTYPE: PRE). (Figure 1).

E. cupidus R.A. Dyer frondes rigidae, pungentes, glaucas similis sed plantae arborescentes; frondes recurvae et sessilibus; foliola falcata; microsporophylla demissa; bullae labiatae.

Plant arborescent, suckering from the base. Trunk often decumbent, up to 2.5 m long, 350-400 mm diameter. Leaf bases persistent, crown slightly tomentose. Cataphylls velvety white, becoming sub-glabrous with age. Leaves numerous in a dense crown, apically recurved, rigid, glaucous, 1.1-2.0 (1.4) m long, pinnae ascendant. Petiole apparent, slightly trigonous, basally bulbous, 230 mm long, slightly tomentose with a reddish brown collar at maturity. Rachis glabrous, round in cross-section, becoming yellow with age. Pinnae dentate or entire, veins not raised abaxially, margins slightly thickened, inflexed, directed toward the frond apex at an angle of circa 45° to the rachis, opposing leaflets inflexed, set at an angle of circa 70° to each other, oriented incubously towards each other; proximal leaflets gradually reduced to a series of spines; median leaflets 180-250 mm long, 15-25 mm wide, outer lamina edge falcate, narrowly elliptic, gradually acuminate apically, pungent, basally sessile to the rachis, apices somewhat turned toward the frond apex. Strobili seriate, dimorphous, glabrous; scale facets smooth, light green. Microsporangiate strobili 1-5 per trunk, subconical, 250-400 mm long, 50-90 mm in diameter, stalked on a peduncle 30-45 mm long. Median microsporophylls slightly descending, lamina

oblong, tapering to the base, 11-24 mm wide, 20-30 mm long, 5-10 mm high, margins contracted to the pedicel, bulla with two trapezoidal lateral facets, without median facet but well defined hump-like sagittal ridge; terminal facet a drooping lip-like structure, often slightly crenulate. Megasporengiate strobili 1-3 per trunk, ovoid, 360-400 mm long, 180-200 mm in diameter, with peduncle 360-400 mm long, 180-200 mm in diameter, with peduncle up to 150-310 mm long. Terminal sterile megasporophyll bullae drawn out into ascending lip-like structures. Median megasporophylls rhombic, 40-60 mm wide, 50-60 mm long, and 350-360 mm high. Bulla with two smooth or slightly verrucose trapezoidal lateral facets and a single smooth or slightly verrucose oblong median facet, terminal facet smooth, slightly concave, 3-5 mm deep, lateral ridges slightly drawn out, sagittal crest verrucose, drooping below the pedicel, seminal ridges smooth or slightly sagittate. Seed circa 200 per cone, sarcotesta orange-red, sclerotesta 35-38 mm long, 23-30 mm in diameter, ellipsoidal, round and smooth.

Plants of *Encephalartos nubimontanus* superficially resemble those of *Encephalartos cupidus* R.A. Dyer (Dyer 1971) by their stiff, pungent, glaucous fronds. However, *E. nubimontanus* can at first glance be distinguished from that species by its arborescent habit, robust nature, and long recurved leaves. Vegetatively, *E. nubimontanus* is easily distinguished from *E. cupidus* by its longer, often nearly sessile fronds. In *E. cupidus* the median pinnae are oblong lanceolate, unlike the normally falcate, often marginally dentate pinnae of *E. nubimontanus* (an ecotype that has thus far been observed only in cultivation and not in habitat, produces a lamina dentate to nearly lobed on both sides and is thus not falcate). Cones are also distinctive. The female cones of *E. nubimontanus* have sterile terminal megasporophyll bullae that are drawn out into ascending lip like structures, which is not the case in *E. cupidus*. In the male cones of *E. nubimontanus* the median microsporophylls are slightly descending with bullae drawn out into lip-like structures, while the median microsporophylls of *E. cupidus* are spreading with bullae not drawn out.

Distribution and Habitat: At present this species is known only from one small area in the Northern Province, at an altitude of 1000 m. Plants grow scattered in mixed deciduous woodland, especially on cliff faces.

Material Studied: To protect plants from poachers, precise localities are not given, and grid references are restricted to a 1:250,000 scale. 2430 Pilgrim's Rest: *P.J.H. Hurter 95R/1* (leaf and male cone, PRE, holotype), *95R/2* (leaf and female cone, PRE), *95R/3* (leaf), *95R/4* (leaf), *95R/5* (leaf and male cone), *95R/6* (leaf), *95R/7* (leaf and male cone), *95R/8* (leaf and male cone).

Encephalartos whitelockii P.J.H. Hurter, *spec. nov.* TYPE: UGANDA: Mpanga River Falls, 1,200 m alt. 27 October 1994, *P.J.H. Hurter 94U/3a* (leaf and median section of microstrobilus [HOLOTYPE: PRE]). (Figure 3).

E. hildebrandtii A. Br. & Bouché propter folia rigidi, dentati, pungentia similis sed frondes planae, leviter recurvatae; foliola effusa nonsuperposita ad apicem frondes apicem versus; microstrobilis laxus; microsporophylla patentia; megasporophylla demissa.

Plant arborescent, suckering from the base. Trunk up to 3.5 m long (rarely to 4.2 m), 350-400 mm in diameter. Leaf bases persistent. Leaves numerous in a dense crown, apically recurved, rigid, subsessile, green, 3.1-3.4(-4.1) m long. Petiole basally bulbous, to 130 mm long, glabrous. Rachis tomentose, becoming glabrous with age. Pinnae dentate, veins not raised abaxially, margins slightly revolute, spreading, opposing leaflets set at an angle of about 160° to each other, not overlapping, but succubously oriented, proximal leaflets gradually reduced to a distinct series of spines. Median leaflets 230-300 mm long and 20-28 mm wide, narrowly elliptic and falcate, gradually acuminate apically, pungent and subsessile basally, apically somewhat turned towards the frond apex. Strobili seriate, dimorphous, glabrous with smooth scale facets, light green becoming yellow with age. Microsporangiate strobili up to 5 per trunk, narrowly ovoid, 500 mm long and 90 mm in diameter, stalked on a peduncle to 320 mm long. Median microsporophylls rhombic, about 29 mm wide, 32 mm long, and 14 mm high, distinctly with two lateral facets and one median facet, the central facet flat or slightly concave. Megasporangiate strobili 1-3 per trunk, ovoid, 450 mm long, 350 mm in diameter, appearing sessile but with peduncle to 100 mm long, cloaked by cataphylls in the trunk crown. Median megasporophylls descending in appearance, rhombic, with two lateral facets and one central facet, slightly drawn out, seminal fringe slightly verrucose, about 55 mm wide, 40 mm long, and 30 mm high with central facet a third of the horizontal diameter of the bulla. Seed about 400 per cone, sarcotesta orange-red; sclerotesta 30-35 mm long and 25-30 mm in diameter, ellipsoidal, round and smooth.

Diagnostic features and affinities: *Encephalartos whitelockii* superficially resembles *E. hildebrandtii* A. Br. & Bouché (Melville 1957, 1958) because of its stiff dentate and pungent green leaves. However, even vegetatively it is easily distinguished from this species. In *Encephalartos hildebrandtii* the pinnae are ascending, succubously overlapping and falcate with the apices directed toward the base of the leaf. In *E. whitelockii* the pinnae are spreading, not overlapping, and falcate with the apices directed toward the apex of the leaf. Profound differences are also observable between the strobili. Microstrobili of *E. whitelockii* are pendulous at maturity while those of *E. hildebrandtii* are erect. The microsporophylls of *E. whitelockii* are spreading while those of *E. hildebrandtii* are strongly ascending. The megasporophylls of *E. hildebrandtii* are spreading and the bullae are not drawn into descending structures as with those of *E. whitelockii*.

Distribution: At present this species is known only from one area along the Mpanga River, Western Uganda (Figure 4).

Material Studied: UGANDA: Mpanga River falls, 2 km west of Lake George, P.J.H. Hurter 94U/5, 94U/3a.

This species is named for Loran M. Whitelock, horticulturist and cycadologist, who has made most of my recent exploration of central and east Africa possible and who has devoted a life time to cycads.



Figure 1. *Encephalartos nubimontanus*: (a) median megasporophyll (*P.J.H. Hurter 95R/2*), (i) frontal view, (ii) adaxial view, (iii) side view; (b) median microsporophylls (*P.J.H. Hurter 95R/5*), (i) side view, (ii) abaxial view, (iii) frontal view; (c) median microsporophylls (*P.J.H. Hurter 95R/8*), (i) side view, (ii) abaxial view, (iii) frontal view; (d) median pinnae (*P.J.H. Hurter 95R/1*); (e) seed (*P.J.H. Hurter 95R/2*); (f. i-iv) a range of pinnae shapes observed within the new species; (g) petiole and proximal pinnae (*P.J.H. Hurter 95R/1*). (dcl. S. Burrows).

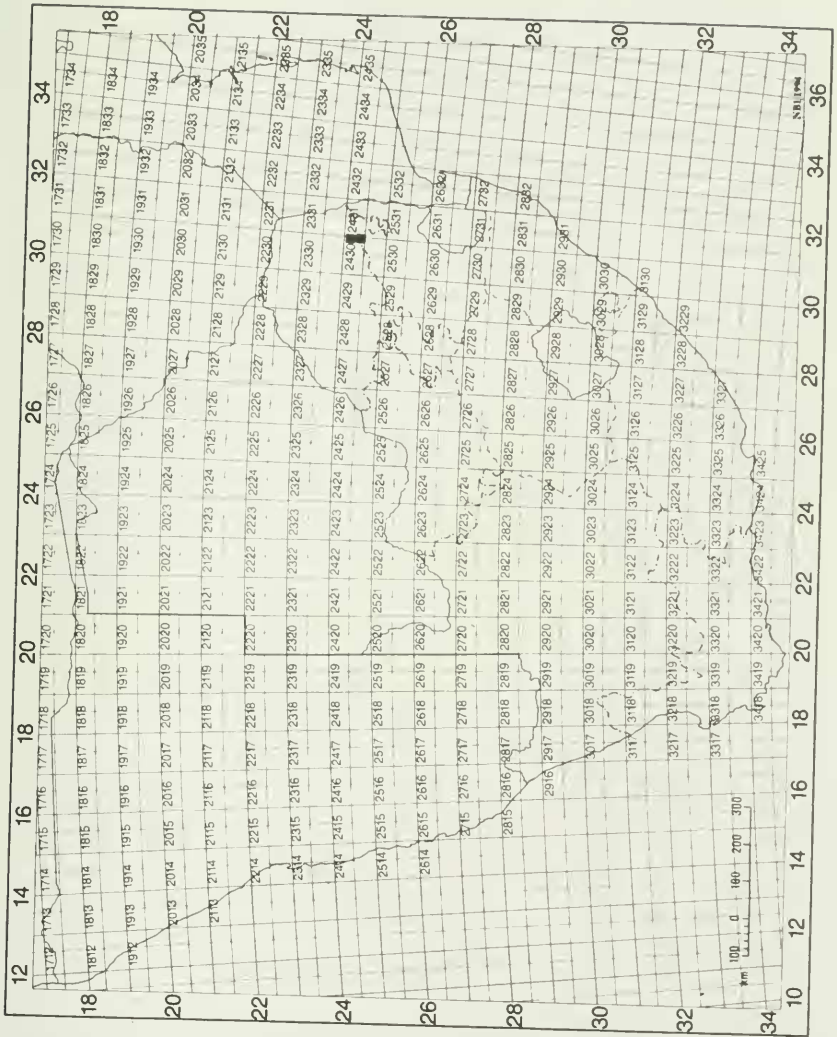


Figure 2. *Encephalartos nubimontanus*: known distribution in South Africa.

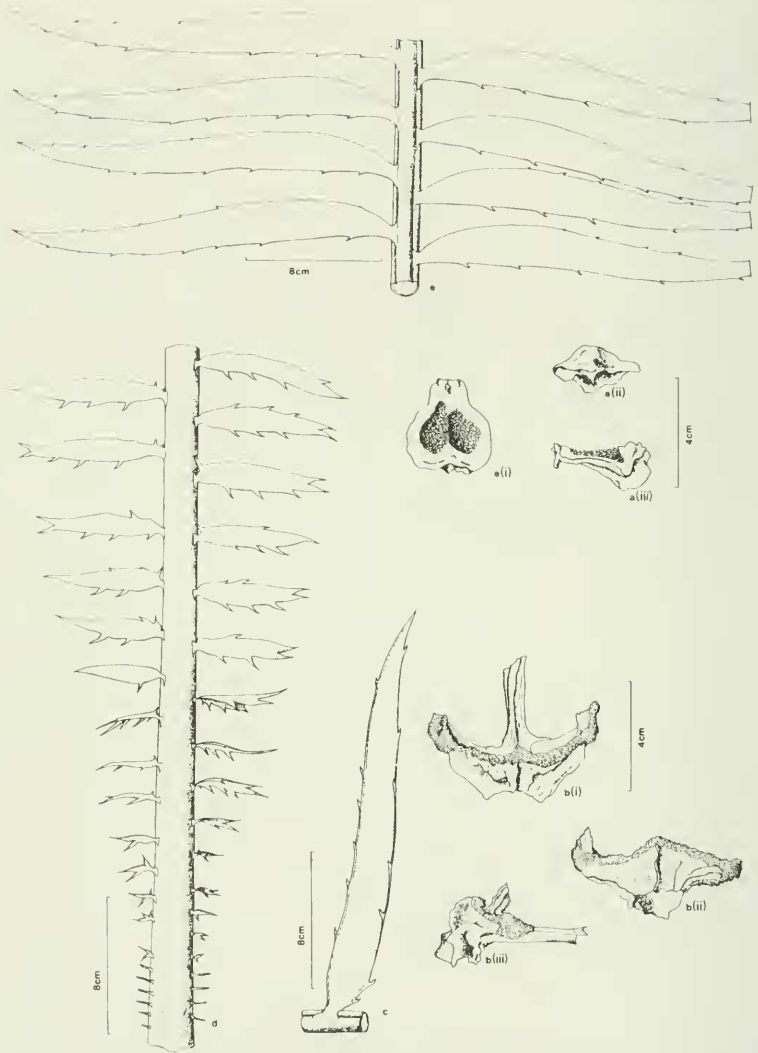


Figure 3. *Encephalartos whitelockii* (a) median microsporophyll (P.J.H. Hurter 94U/3a), (i) abaxial view, (ii) frontal view, (iii) side view; (b) median megasporophyll (P.J.H. Hurter 94U/5) (i) adaxial view, (ii) frontal view, (iii) side view; (c) median pinna; (d) petiole and proximal pinnae (P.J.H. Hurter 94U/3a); (e) median section of leaf (P.J.H. Hurter 94U/3a).

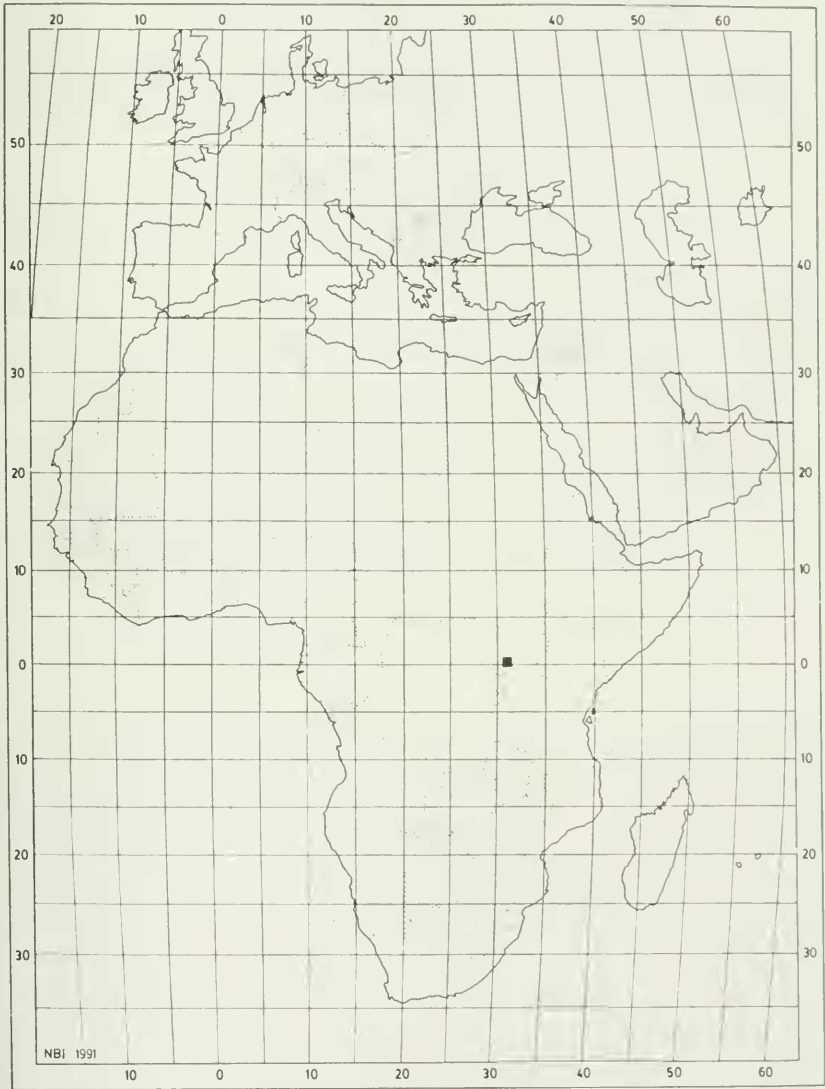


Figure 4. *Encephalartos whitelockii*: known distribution in Uganda.

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REFERENCES

- Dyer, R.A. 1971. A further new species of cycad from the Transvaal. *Bothalia* 10:370-383.
- Melville, R. 1957. *Encephalartos* in Central Africa. *Kew Bull.* 12:237-257.
- Melville, R. 1958. Gymnospermae. in *Flora of Tropical East Africa*. pp 3-10. Crown Agents, London, Great Britain.